Listing of the Claims:

The following is a complete listing of all the claims in the application, with an indication of the status of each:

1. (Currently Amended) A method for calibrating a tool center point (TCP) of tools ~~(13)~~ for industrial robots ~~(8)~~ comprising a calibration apparatus ~~(1)~~ that has at least two light barriers which are angled to one another with a vertex angle (α) greater than zero in each case and cross one another at a crossing point (R), exhibiting the steps of:

a) fixing DESIRED TCP positional coordinates of a DESIRED tool center point ($TCP_{DESIRED}$) of the tool ~~(13)~~ with reference to a tool reference point (W) of an industrial robot ~~(8)~~, and to a TCP coordinate system referred to the tool center point (TCP), ~~and~~

b) moving the tool ~~(13)~~ directly to the DESIRED tool center point with reference to the TCP coordinate system through the light barriers without searching the crossing point (R) such that the tip of the tool ~~(13)~~ corresponding to the tool center point (TCP) interrupts the light barriers successively, and deviation of the tool center point is determined from the temporally offset interruption of the individual light barriers,

~~characterized by~~

c) recording ACTUAL TCP positional coordinates upon the interruption of a respective light barrier,

d) determining the differences between the DESIRED TCP positional coordinates for the interruption of the light barriers at a DESIRED tool center point ($TCP_{DESIRED}$) and the corresponding recorded ACTUAL TCP positional coordinates for the ACTUAL tool center point (TCP_{ACTUAL}), and

e) calculating the deviation of the ACTUAL tool center point (TCP_{ACTUAL}) from the DESIRED tool center point ($TCP_{DESIRED}$) for the number of planes that is prescribed by the light barriers from the differences and the

known position and vertex angles (a) for the light barriers..

2. (Original) The method as claimed in claim 1, characterized by correcting the TCP positional coordinates by the calculated deviation between the fixed ACTUAL TCP position coordinates by the calculated deviation of the ACTUAL tool center point (TCP_{ACTUAL}) from the DESIRED tool center point ($TCP_{DESIRED}$) for the planes of a coordinate system, on which the TCP positional coordinates are based.

3. (Previously presented) The method as claimed in claim 1, characterized in that the DESIRED tool center point ($TCP_{DESIRED}$) is fixed with the aid of the TCP positional coordinates in the case of which the tool tip corresponding to the tool center point (TCP) simultaneously interrupts all the light barriers at a common crossing point (R).

4. (Currently amended) The method as claimed in claim 1, wherein two light barriers of said at least two light barriers being provided that cross one another at a vertex angle (α) of 90° and define a first plane of a coordinate system, and with the first light barrier corresponding to a first axis (y), and the second light barrier corresponding to a second axis (z) of the coordinate system, characterized in that the deviation of the tool center point (TCP) for the first axis (y) is determined from the deviation, determined upon interruption of the first light barrier, of the ACTUAL tool center point (TCP_{ACTAUL}) from the DESIRED tool center point ($TCP_{DESIRED}$), and the deviation of the tool center point (TCP) for the second axis (z) is determined from the deviation, determined upon interruption of the second light barrier, of the ACTUAL tool center point (TCP_{ACTUAL}) from the DESIRED tool center point ($TCP_{DESIRED}$).

5. (Previously presented) The method as claimed in claim 1, characterized by

determining the ACTUAL TCP position coordinates as mean ACTUAL TCP positional coordinates between the instant of the interruption of a light barrier and the subsequent release of the light barrier.

6. (Original) The method as claimed in claim 5, characterized by determining the tool diameter from the difference of the ACTUAL TCP positional coordinates determined at the instant of the interruption of a light barrier and the subsequent release of the light barrier.